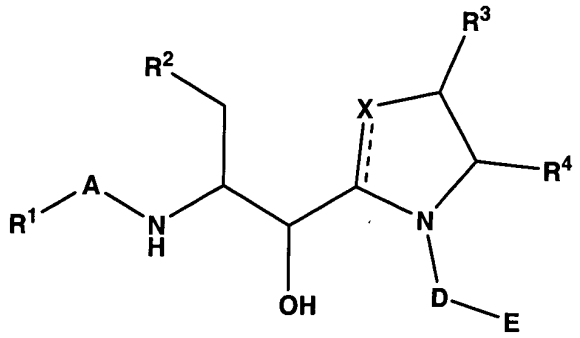
A1 -- 23. A compound of the formula:



wherein

A is selected from the group consisting of: a direct bond, $-SO_2-$, $-NHSO_2-$, $-(C=O)-$, $-(C=S)-$, $-NR^5(C=O)-$, $-O(C=O)-$, and $-C(R^6R^7)(C=O)-$, wherein R_5, R_6, and R_7 are independently selected from the group consisting of hydrogen and lower alkyl;

D is selected from the group consisting of: $-SO_2-$, $-(C=O)-$, and $-(C=S)-$;

E is selected from the group consisting of: C_1-C_{10} hydrocarbon, substituted aryl, heterocyclyl, and substituted heterocyclyl;

X is selected from the group consisting of: $-O-$, $-S-$, $-NR^8-$, and $-N(R^8)(C=O)-$ wherein R^8 is selected from the group consisting of: absent, hydrogen, and lower alkyl;

 is a single bond, or in the alternative, when X is NR^8 wherein R^8 is absent, is a double bond;

R^1 is selected from the group consisting of C_1-C_{20} alkyl, aryl, alkylaryl, substituted alkylaryl, C_1-C_{10} alkyloxy, C_3-C_{10} oxaalkyl, aryloxy, substituted aryl, substituted aryloxy, heterocyclyl, and heterocyclyloxy;

R^2 is selected from the group consisting of: C_1–C_{10} hydrocarbon, substituted aryl, and heterocyclyl; and

R^3 and R^4 are independently selected from the group consisting of: C_1–C_{20} alkyl, C_1–C_{10} hydrocarbon, aryl, substituted aryl, alkylaryl, substituted alkylaryl, heterocyclyl, and substituted heterocyclyl; or, in the alternative, R^3 and R^4 taken together with the carbon atoms to which they are attached form a cyclic moiety selected from the group consisting of: aryl and substituted aryl.

24. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a compound according to claim 23, or a pharmaceutically acceptable salt or solvate thereof.

25. A pharmaceutical composition according to claim 24, further comprising at least one additional antiviral agent. --